

Remarks/Arguments

Reconsideration of this application is requested.

Specification

The title is objected to as not descriptive. In response, the title is amended to "Color Image Scanning and Printing Device with Efficient Conversion of Scanned Image Data into Print Image Data", as suggested by the Examiner.

The disclosure is objected to for various typographical and grammatical errors. In response, paragraphs 0009 and 0032-0034 are amended as suggested by the Examiner. For example, paragraph 0009 now recites "for two pages" and paragraphs 0032-0034 recites "shows a starting point of".

Claim Status

Claims 1-20 were presented. Claims 1, 4, 13, and 14 are amended. Claims 2 and 15-17 are canceled without prejudice. Claims 1, 3-14, and 18-20 are now pending.

Claim Objections

Claims 2 and 17 are objected to as informal. In response, claims 2 and 17 are canceled without prejudice, rendering the objections moot.

Claim Rejections – 35 USC 103

Claims 1, 2, 5 and 13-20 are rejected under 35 USC 103(a) as obvious over Yamada (US 5,839,039). Claims 3, 4 and 18-20 are rejected as obvious over Yamada in view of Takayanagi (US 5,040,075). Claims 10 and 11 are rejected as obvious over Yamada in view of Maekawa (US 5,734,951). Claim 12 is rejected as obvious over Yamada in view of Maekawa and Takayanagi. In response, applicant traverses the rejections and amends claims 1, 13 and 14 to clearly distinguish over the applied references.

As described in applicant's specification, a color image scanning and printing device requires a conversion process for converting an obtained RGB or Lab image data into an image data of the CMYK color components for printing. However, when the conversion process is not carried out efficiently, a time lag is generated

that delays the scanning and printing process. For example, paragraph 0036 discloses the conversion process executed in the sequence of K1, K2, C1, C2, M1, M2, Y1, and Y2, where the letter indicates the color component and the numeral indicates the page numbers. Although K1 and K2 are converted first and printing of the black image can be started quickly, the conversion of C1 and C2 is not completed before the printing process of K1 and K2 is completed. Therefore, the printing of the cyan image is undesirably delayed. Applicant's invention solves this problem.

The present invention is directed to a color image scanning and printing device that efficiently performs a conversion process of scanned image into image data for printing. As disclosed in the timing chart of FIG. 2, a first page is scanned and converted into color components K1, C1, M1, and Y1, and a second page is likewise scanned and converted into color components K2, C2, M2, and Y2. The conversion process is executed in the sequential order of K1, C1, K2, C2 (paragraph 0037). That is, at the time the image of the second page is scanned, the conversion process for the C1 component of the first page is completed. As shown in FIG. 2, the conversion of K1 and C1 is completed before the second page is completely scanned. Importantly, the two color components K1 and C1 of a first page are converted before conversion is executed for the two color components K2 and C2 of a second page. Accordingly, since the color conversion process of the color component C1 is executed by using an available time during the scanning process of the second page, an extremely efficient color conversion process is realized and the entire processing time is reduced.

Claims 1, 13, and 14 are amended to emphasize this feature. Claim 1, for example, now recites:

"the conversion process for the two preceding color components of the first page of the two pages by the conversion unit is completed before the conversion process is executed for the two preceding color components of the second page of the two pages..."

Yamada does not operate in this manner. As disclosed in FIG. 14A and column 4, lines 42-50, paper A and paper B are provided on a transfer drum to form a full-color image in the sequence of magenta (A), magenta (B), cyan (A), cyan (B), yellow (A), yellow (B), black (A), and black (B). Yamada's sequence is analogous to the sequence of K1, K2, C1, C2, M1, M2, Y1, and Y2 as discussed above, which is less efficient than applicant's sequence. Thus, Yamada clearly does not disclose or suggest that the conversion of magenta and cyan color components of paper A is completed before executing the conversion of the magenta and cyan color components of paper B.

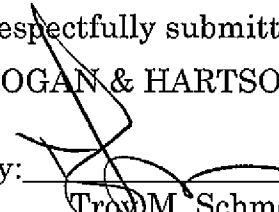
Takayanagi is cited for teaching an image storage means 50 and CRT 91. Maekawa merely discloses a liquid crystal display 91. Thus, Takayanagi and Maekawa do not remedy the deficiencies of Yamada. For these reasons, the rejections of claims 1-20 under 35 USC 103(a) should be withdrawn.

Conclusion

This application is now believed to be in condition for allowance. The Examiner is invited to telephone the undersigned to resolve any issues that remain after entry of this amendment. Any fees due with this response may be charged to our Deposit Account No. 50-1314.

Respectfully submitted,
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